CLAIMS:

1. A device for the determination of the position of an instrument (6) in a vascular system (8), comprising:

- at least one localizer (4, 5) fitted to the instrument (6), the spatial position ($\underline{r}_1$, $\underline{r}_2$) of which can be measured and by means of which the orientation ($\underline{r}_2$-$\underline{r}_1$) and/or the shape of an instrument section can be measured;

- a data processing unit (7) with a memory in which a vascular map (K) is stored, the data processing unit being set up to correct measured spatial positions ($\underline{r}_1$, $\underline{r}_2$) of the localizer (4, 5), taking into account the vascular map (K) and a quality dimension, the quality dimension including weighted components measuring the deviation of the measured position and the deviation of the measured orientation and/or shape of the instrument section from the vascular layout (8) as represented by the vascular map (K).

2. A device as claimed in claim 1, characterized in that the localizer incorporates a magnetic field sensor (4, 5) of an electromagnetic localizing device.

3. A device as claimed in claim 1, characterized in that the data processing unit is set up to calculate a locally continuous transformation from individual corrections ($\underline{k}_1$, $\underline{k}_2$).

4. A device as claimed in claim 1, characterized in that at least two localizers (4, 5) are attached to the instrument (6) in a known relative position (d), and in that the data processing unit (7) is set up to take account of this relative position (d) when correcting the measured positions ($\underline{r}_1$, $\underline{r}_2$).

5. A device as claimed in claim 4, characterized in that the data processing unit (7) is set up further to correct the position ($\underline{r}_2$') of at least one localizer (4) corrected while taking account of the quality dimension in accordance with the vascular layout of the vascular map (K), so that the final corrected positions ($\underline{r}_1$', $\underline{r}_2$") likewise adopt the known relative position (d).

6. A Device as claimed in claim 1, characterized in that the data processing unit (7) is set up to output a warning if the corrected position ($\underline{r}_1$', $\underline{r}_2$") of the localizer (4, 5) includes an orientation ($\underline{r}_2$"-$\underline{r}_1$') and/or a shape of the instrument section deviating by more than a preset limit value from the measured orientation ($\underline{r}_2$-$\underline{r}_1$) and/or shape.

7. A Device as claimed in claim 1, characterized by means (1) allowing the position of the localizer (4, 5) relative to the vascular map (K) to be verified.

8. A Device according to claim 1, characterized by an imaging device (1) for the generation of the vascular map (K).

9. A method for the determination of the position of an instrument (6) in a vascular system (8) with the aid of at least one localizer (4, 5) attached to the instrument (6) and of a vascular map (K), comprising the following steps:

a) Measurement of the spatial position ($\underline{r}_1$, $\underline{r}_2$) of the localizer (4, 5) and of the orientation ($\underline{r}_2$-$\underline{r}_1$) and/or shape of an instrument section;

b) Correction of the measured spatial position ($\underline{r}_1$, $\underline{r}_2$) with reference to a vascular map (K) and a quality dimension, the quality dimension including weighted components measuring on the one hand the deviation of the measured position of the localizer (4, 5) and on the other hand the deviation of the measured orientation and/or shape of the instrument section from the vascular layout (8) according to the vascular map (K).

10. A method as claimed in claim 9, characterized in that a spatially continuous transformation is calculated on the basis of individual corrections ($\underline{k}_1$, $\underline{k}_2$).